Course Overview:

Generative AI has emerged as a powerful tool for creating new and innovative solutions in various industries. This course is designed to provide technical managers with a comprehensive understanding of generative AI techniques and their applications. Participants will gain insights into the underlying principles, practical implementation, and management considerations associated with generative AI projects. Through a combination of theoretical lectures, case studies, and hands-on exercises, participants will develop the necessary knowledge and skills to effectively lead generative AI initiatives within their organizations.

Prerequisites:

* Basic understanding of artificial intelligence concepts and technologies.
* Familiarity with programming fundamentals and basic coding experience.
* Prior experience in a technical or managerial role.

Audience:

The "Generative AI for Technical Managers" course is designed specifically for technical managers who are looking to enhance their knowledge and skills in the field of generative AI.

Duration:

2 days between 10 am to 6 pm local time

Learning Approach:

* Recap in the beginning of the class each day to bring everyone on the same page
* Focus on core part of Generative AI to build a solid foundation for future irrespective of the technology
* Interactive learning using whiteboard
* Pragmatic learning methods i.e. Demonstrations and Exercises

Course Outline

Generative AI Fundamentals - 2 hours

* What is Generative Ai
* Key Concepts in Generative AI
* Generative Models and Discriminative Models
* Types of Generative Models (e.g., Variational Autoencoders, Generative Adversarial Networks)
* Training and Inference in Generative Models
* Discuss few Industry use cases of Generative AI Applications
  + Applications of Generative AI and Deep Learning
    - Image and Video Generation
    - Music and Audio Generation
* Text Generation
* *Lab: Hands on lab on Text Generation using Large Language models*

Introduction to Large Language Models (LLMs) - 3 hours

* What are Large Language Models?
* Importance and Applications of Large Language Models
* Overview of LLMs in the Context of Natural Language Processing
* Understanding the Architecture of Large Language Models
  + Transformer Architecture
  + Self-Attention Mechanism
  + Pre-training and Fine-tuning of LLMs
* Training and Data Requirements for Large Language Models
  + Training Corpus and Data Collection
  + Pre-processing and Tokenization
  + Training Process and Computational Resources

**Prompt Engineering - 3 hours**

* What is Prompt Engineering?
* Importance of Prompt Engineering in Modern Organizations
* Role of Managers in Prompt Engineering and Management
* Understanding the Prompt Generation Process
* Design and optimize prompts
  + Apply advanced prompt engineering techniques
  + Review and apply the latest and most advanced prompt engineering techniques
  + Understanding of Multi-modal LLM and different methods in Multi-modal LLMs
  + Tree-of-thought and chain-of-thought methods

Collaborating with Analysts, Engineers, and Scientists - 6 hours

* Generative AI Product Development
  + Building AI first Products
  + Understanding the complexity and challenges
  + Design Exploration and Ideation
  + Simulation and Testing
* Generative AI Project Lifecycle
  + Evaluation metrics for generative AI models
  + Qualitative and quantitative assessment of generative AI outputs
  + User feedback and engagement analysis
  + Continual improvement and iteration techniques
* Data Protection, Privacy and Security
  + Things to consider for protecting Data
  + Data Lifecycle Management
  + Compliances & Regulations
  + Aspects to consider for Data Security
  + Data Privacy Considerations
* Generative AI Deployment
  + Model deployment strategies: on-premises, cloud-based, and edge deployment
  + Integration with existing systems and workflows
  + Testing and performance optimization
  + Monitoring and maintenance of generative AI models
* Responsible AI Considerations
  + Biases
  + Ethical implications of generative AI
  + Fairness, transparency, and accountability in AI projects
  + Regulatory frameworks and guidelines for generative AI
  + Building responsible and ethical generative AI systems
* Understanding the roles and responsibilities of analysts, engineers, and scientists in generative AI projects
* Effective communication and collaboration strategies
* Project scoping and requirement gathering
* Overcoming challenges and mitigating risks in project implementation

**Note:** Each hour mentioned represents the estimated duration for the corresponding module. The lab exercises may involve practical implementation and hands-on experience with the discussed concepts.